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Unit

Client Side Scripting

- Introduction to JavaScript;
- Basic Syntax;
- Structure of JavaScript Program;
- Variables and Data Types;
- Statements: Expression, Keyword, Block; Operators;
- Flow Controls, Looping,
- Functions;
- Popup Boxes: Alert, Confirm, Prompt; Objects and properties;
- Constructors;
- Arrays;
- Built-in Objects: Window, String, Number, Boolean, Date, Math, RegExp, Form, User Defined Objects; Event Handling and Form Validation, Error Handling, Handling Cookies, Basics of AJAX and jQuery

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Introduction to JavaScripts

- What is JavaScript?

    - JavaScript is a scripting Language created by Netscape

        - Scripting Language is a lightweight programming language.

        - Scripting Languages are not needed to be compiled.

        - The language is interpreted at runtime.

What is a Scripting Language?

Introduction to JavaScript (Contd.)

- A JavaScript is usually directly embedded in an HTML page.

- External JavaScript can be created which can be used by HTML pages.

- JavaScript adds interactivity to HTML pages.

- JavaScript's are integrated into the browsing environment.

What can a Java script do?

- ✍ Java Script gives HTML designers a programming tool.
- ✍ Java script can put dynamic text into an HTML page.
- ✍ Java script can react to events.
- ✍ Java script can read and write HTML elements.
- ✍ Java script can be used to validate data.
- ✍ Java script can be used to detect the visitor's browser.
- ✍ Java script can be used to create cookies.
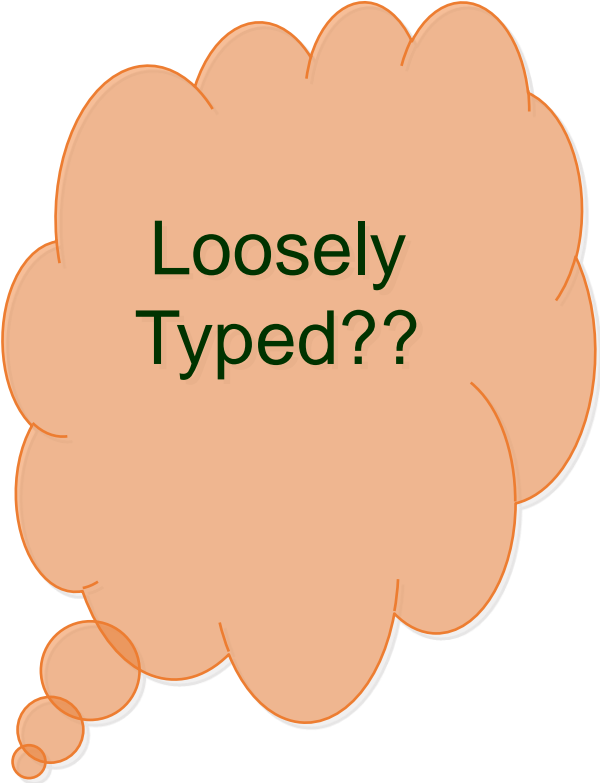
JavaScript Variables

- Variable:

↳A variable is a symbolic name that represents some data in the memory.

↳A variable value can change during the execution of the JavaScript.

↳A variable can be referred by its name to see or change its value.

↳Variable names are case sensitive. (A and a are two different variable)

↳Variable name must begin with a letter or underscore character.

Declaring (creating) Java Script Variables

- Variables can be declared using the var statement

  var <variable name>=some value

- Variables can also be created without using var statement

  <variable name>=some value

  - Eg

  var firstname="lb"

      OR

  firstname="lb"

Data Type in JavaScript
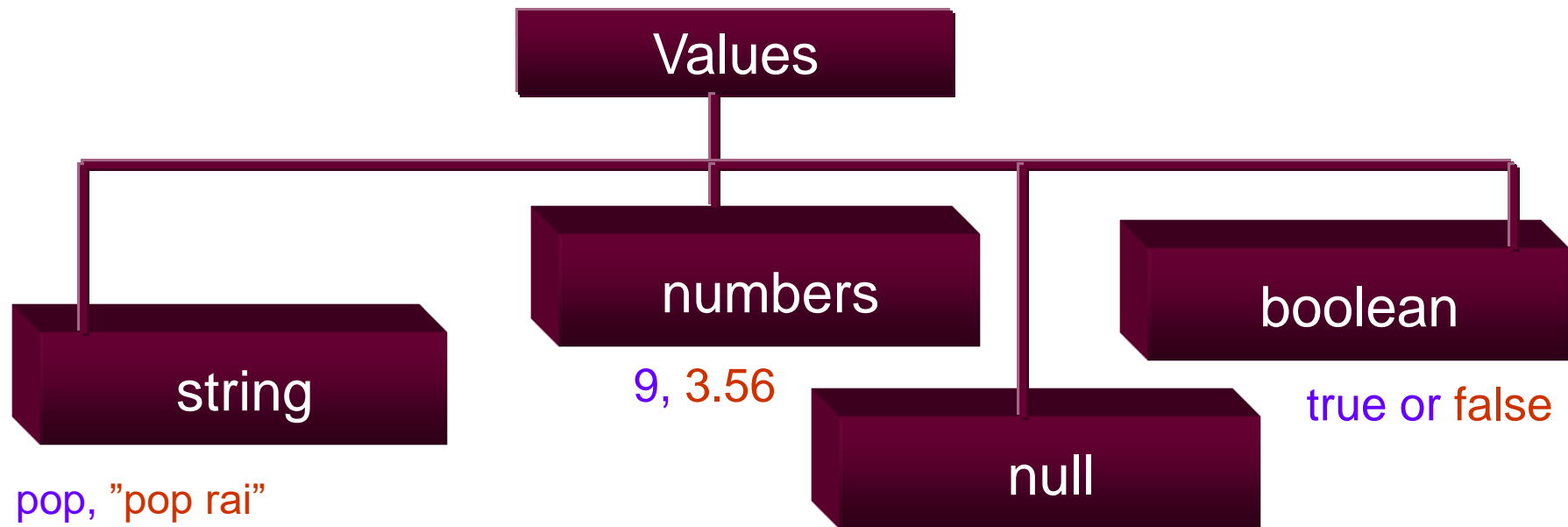
- JavaScript is a loosely typed language.

Loosely Typed??

- Data Type of Variable need not be specified during declaration.

- Data types are automatically converted during script execution.

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Data Type in JavaScript (contd.)
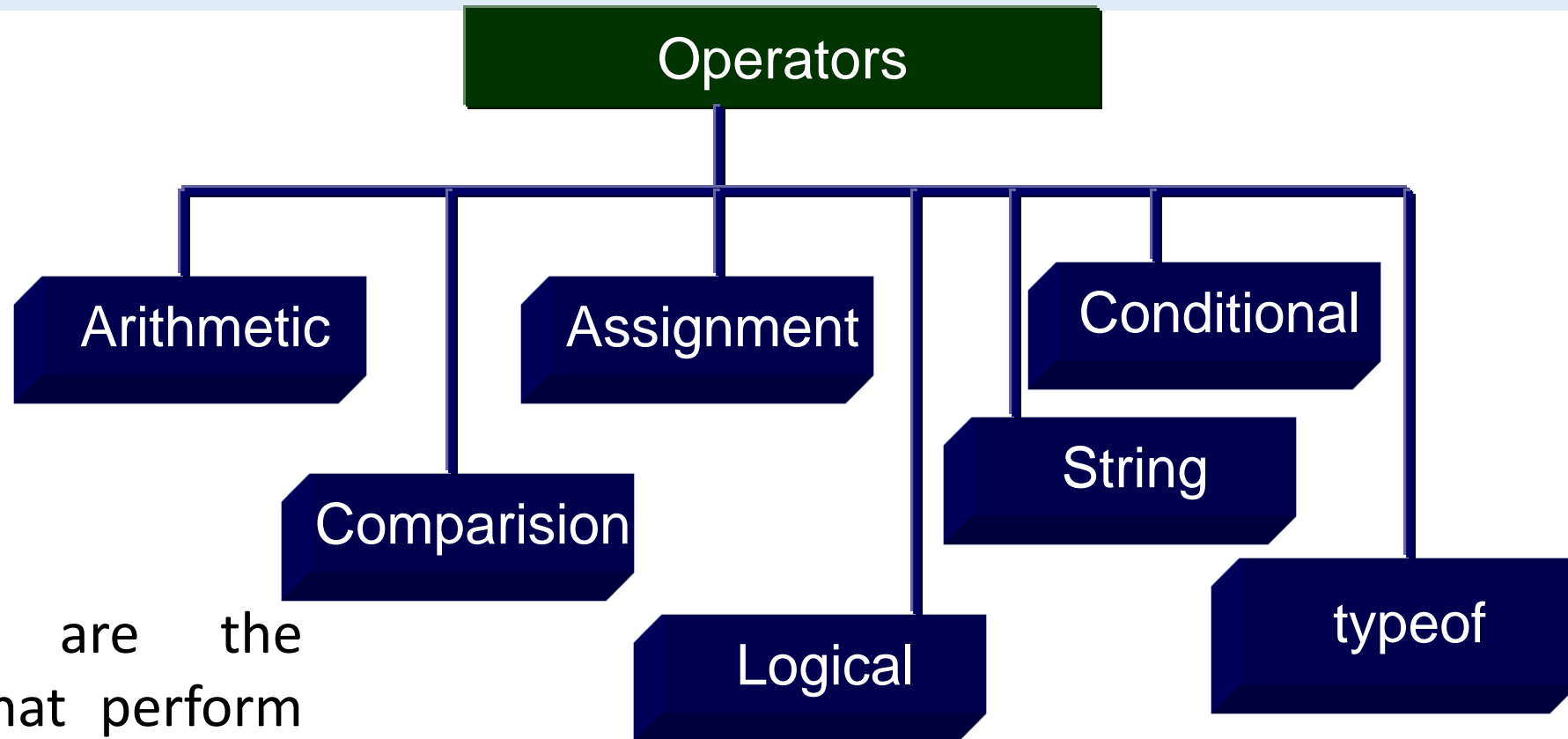
- JavaScript recognizes the following type of values:

Values

string

numbers

9, 3.56

null

boolean

true or false

pop, "pop rai"

A Special keyword which refers to nothing

Data Type in JavaScript (contd.)

Literals	
var firstname="Samuel" firstname="Samuel" firstname="Samuel J Palmisano"	String Literal
var marks=90 marks=90	Integer Literal
var marks=90.54 marks =90.54	Floating Point Literal
var smoking=true smoking=false	Boolean Literal

Special Characters	
Character	Meaning
\b	backspace
\f	formfeed
\n	newline
\t	tab

JavaScript Operators

```
                          Operators
                              |
        +-----+--------+------+------+-------+--------+
        |     |        |      |      |       |        |
   Arithmetic |   Assignment  |  Conditional           |
        |     |        |      |       |       |        |
      Comparision    Logical     String         typeof
```

Operators | **Assignment** | **Conditional**

Arithmetic

Comparision

Logical

String

typeof

Operators are the symbols that perform tasks or operation on operand.

JavaScript Operator (contd.)

Arithmetic

The arithmetic operator are those operators which perform arithmetic operation like addition , subtraction , division, etc. on operands.

Operator	Description	Example	Result
+	Addition	x=5 y=2 x+y	7
–	Subtraction	x=5 y=2 x-y	3
*	Multiplication	x=5 y=2 x*y	10
/	Division	x=5 y=2 x/y	2.3
%	Modulus	x=5 y=2 x%y	1
++	Increment	x=5 x++	6
– –	Decrement	x=5 x--	4

JavaScript Operator (contd.)

Comparison

The comparison operators are used to compare the values of two expression and return either True or False as a logical value.

Operator	Purpose	Example
<	Less than	a<b
< =	Less than or equal to	A< = b
>	Greater than	a>b
> =	Greater than or equal to	a >= b
!=	Not equal to	a!=b
= =	Equals to	a==b

JavaScript Operator (contd.)

Assignment

Assignment operator is used to assign the value or result of an expression to an identifier.

Operator	Example	Same as	Result
=	x=10		10
+=	x=10 x+=10	x=x+10	20
-=	x=10 x-=5	x=x-10	5
*=	x=10 x*=5	x=x*10	50
/=	x=10 x/=5	x=x/5	2
%=	x=10 x%=5	x=x%5	0

JavaScript Operator (contd.)

Logical

The logical operator is used to combine two or more expressions and returns the result as either True or False.

Operator	Description	Example	Result
&&	and	x=5 y=3 x>3 && x%y>4	false
||	or	x=5 y=3 x>3 || x%y>4	true
!	not	x=5 y=3 x>3 && !(x%y)>4	true

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JavaScript Operator (contd.)

String

A string operator is a symbol like (+), which is used to combine two or more strings

Operator	Description	Example	Result
+	Concatenation	x="Java" y="Script" z=x+y	JavaScript

JavaScript Operator (contd.)

Conditional   It tests Boolean expression which returns either true or false. It is also called Ternary operator.

Description	Syntax	Example	Result
Conditional	variablename=(condition)?value1:value2	x=5 y=2 z=(x>y)?x:y	5

JavaScript Operator (contd.)

typeof

Description	Description	Example	Result
typeof	Checks the data type of a variable	x=5 typeof(x)	number
		x="Samuel" typeof(x)	string
		x typeof(x)	undefined

Syntax of JavaScript

- Statements may or may not contain a semicolon at the end.

- Multiple statements on one line must be separated by a semicolon.

- JavaScript is case sensitive.

Using <script> tag

- The HTML <script> tag is used to enter JavaScript into a HTML.

- The <script> tag can be embedded within

  - <head> tag.

  - <body> tag.

- JavaScript in the head section will be executed when called.

- JavaScript in the body section will be executed while the HTML page is loaded.

- Unlimited number of JavaScript's can be placed both in head and body section in a HTML document.

- The <script type="text/javascript"> and </script> tells where the java scripts starts and ends.

<html>
<head>
<title>Example</title>
 </head>
  <body>
  <script type="text/javascript">

  ……………………………..

  </script>
  </body>
  </html>

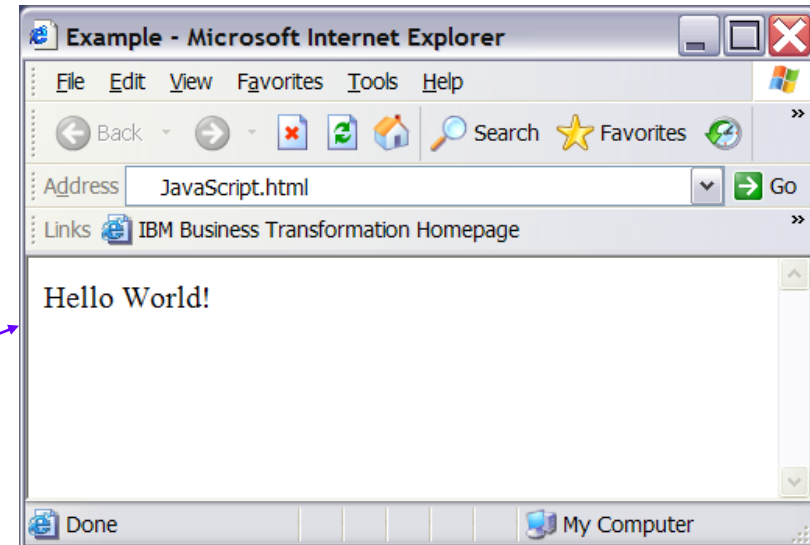The document.write command is a standard java script command for Writing output to a page.

To put a JAVASCRIPT into an HTML page

Eg:

```
<html>
<head><title>Example</title>
</head>

<body>

<script type="text/javascript">

document.write("Hello World!");

</script>

</body>

</html>
```

Is a standard command for writing output to a page

How to Handle Older Browsers

- Browsers that do not support JavaScript will display the script as it is. Use the HTML comment tag to prevent this.

Eg.

```
<script type="text/javascript">

<!--

document.write("Hello World!")

//-->

</script>
```

The two forward slashes at the end of comment line (//) are a JavaScript comment symbol. This prevents the JavaScript compiler from compiling the line.

Using an External JavaScript

- A JavaScript can be written in an external file, which can be used by different HTML pages.

- The external script cannot contain the <script> tag.

- The external file needs to end with the .js extension.

Using External JavaScript (contd.)

```
function Hello(){

        alert('i am LB');

}
```
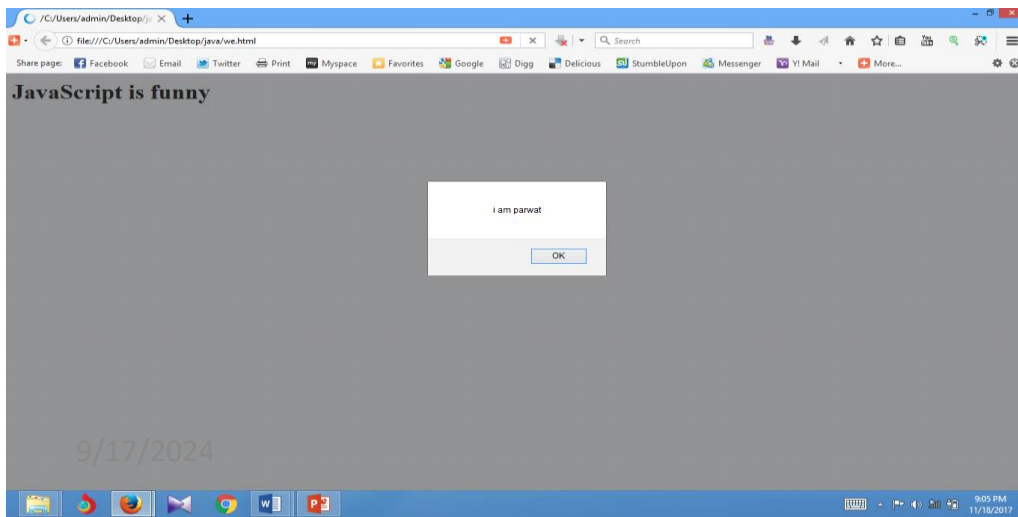Save this as File.js


```
<html>
<head>
<script src="file.js">
</script>
</head>
<body onload="Hello();">
<h1>JavaScript is funny</h1>
</body>
</html>
```

JavaScript.html

To add two numbers

```
<html>
<head> <title>sum</title>
</head>
<body>
<script>
var a=5;
var b=6, c;
c=a+b;
document.write("sum of two no is",c);
</script>
</body>
</html>
```

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Write a program in JavaScript to display name and address of the user.

```html
<html>
<head>
<title></title>
</head>
<body>
<script type="text/javascript">
var a="LB";
var b="Biratnagar-8";
document.write(a,"<br>");
document.write(b);
</script>
</body>
</html>
```

LB

Write a program in JavaScript to display name, address and age of the user

```
<html>
<head>
<title></title>
</head>
<body>
<script type="text/javascript">
var a="World";
var b="Biratnagar-5";
var age=85;
document.write("Hello ",a,"<br>");
document.write("i live in ",b,"<br>");
document.write("i am ",age, " years old");
</script>
</body>
</html>
```

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